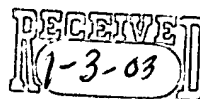


Response Under 37 C.F.R. §1.111
U.S. Patent Appln. No. 09/749,480



Docket No. 6169-141
IBM Docket No. BOC9-1999-0084

present invention can detect a contact with a touchscreen and generate contact information for the detected contact. The contact information, which can specify size information for the detected contact, can be compared with contact criteria. As noted in the specification, contact criteria can include size information such as thresholds or ranges for classifying the detected contact as being initiated by a finger or a stylus. Based upon the comparison, the present invention can determine whether the detected contact was initiated by a finger or a stylus.

Using the stylus/finger determination, one or more strategies for operation of a pointer and/or for presentation of a graphical user interface suited for control by a finger or stylus can be implemented. For example, if a determination is made that a finger initiated contact with the touchscreen, the on-screen pointer can be offset from the location of the detected contact so as not be obscured by the finger itself, the duration of contact can be detected to prevent against inadvertent finger contacts with the touchscreen, and/or a specialized visual interface can be presented which is suited for manipulation by a finger rather than a stylus. Thus, the present invention can, while in operation, dynamically determine whether contact is from a finger or a stylus and then implement a suitable strategy to facilitate interaction with a user despite the type of instrument used to contact the touchscreen.

Turning to the rejections on the art, claims 1-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sellers. Sellers discloses a current sensing touchpad device for use with computers. The Sellers device is formed with a matrix of two overlaid arrays of conductors spaced from each other by an intermediate dielectric. A user touching an area of the touchpad, whether using a finger or a stylus, causes current to flow. Processing software can determine the location of the contact responsive to the current flow.

The Examiner asserts that Sellers teaches a touchpad which responds to either user finger contact or stylus contact. In support, column 3, lines 20-25 of the Sellers' specification has been cited. The Examiner further contends that Sellers teaches contact information when contact is made by the user's finger or by a stylus, that a surface area of the user's finger forms an electrical connection between the conductors

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in the X-Y matrix, and that similar results occur during stylus contact with appropriate conductor spacing. In support the Examiner has cited column 5, lines 49-58 and Figs. 7 and 8 of the Sellers specification.

The Examiner concedes, however, that Sellers' does not teach a touchscreen system as claimed, but asserts that it would have been obvious to one of ordinary skill in the art to utilize a touchscreen rather than a touchpad because it would provide an accurate reading when it comes to detecting which input pointer touches the screen whether it is a finger or a stylus.

In response, the Applicants agree that Sellers discloses a touchpad which can be operated by a stylus or a finger. The Applicants, however, disagree with the assertion that it would have been obvious to one of ordinary skill in the art to utilize a touchscreen rather than a touchpad because it would provide an accurate reading when it comes to detecting which input pointer touches the screen whether it is a stylus or a finger. Significantly, the Applicants do not claim to have invented a touchscreen which can operate responsive to both finger and stylus contact. Rather, the present invention can distinguish a finger contact from a stylus contact. Sellers includes no such teaching or suggestion.

At column 3, lines 20-25, Sellers discloses only that a touchpad used as a data input terminal for a computer can respond to finger or stylus contact. At column 5, lines 49-58, Sellers teaches that as pressure of a finger contact with the touchpad increases, an increased number of electrical conductors are electrically connected. Sellers goes on to teach that this can cause increased current flow. Increased current flow detected over a period of time provides an indication of inward movement which can be translated into a pressure measurement represented by a "z-axis contact measure." Notably, the use of increased pressure, whether from a finger or a stylus, is likely to cause an increased number of "appropriately spaced" conductors to make an electrical connection thereby causing increased current flow. Accordingly, Sellers does not distinguish between finger and stylus contact.

In contrast to the Sellers device, in the present invention, contact information, which can specify contact size information, is compared with contact criteria, for

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example a threshold value. Accordingly, as specifically recited in claim 1, "based upon said comparing of said contact information, [the present invention] determin[es] whether said contact was initiated by a finger or a stylus." Sellers makes no such comparison and nowhere does Sellers teach or suggest that stylus contact can be discerned from finger contact. As noted, increased pressure from a finger and a stylus both are likely to cause increased current flow.

Not only does Sellers fail to teach or suggest that the source of a contact can be identified as a finger or a stylus, but Sellers also fails to provide any motivation for making such a determination. The present invention discerns between finger contact and stylus contact so that any of a variety of pointer offset and/or visual interface alteration techniques as described in claims 5-10 can be applied. If such a determination is made, the location of the "hot spot", for example, can be controlled. The "hot spot" refers to the point determined to be the location at which the user is pointing. The "hot spot" typically is represented in a graphical user interface on a display screen by changes of state in the objects at which the user has pointed or by a visual pointer or arrow, like that typically controlled by a mouse in modern graphical user interfaces.

Users often switch between using a stylus and a finger when operating devices with touchscreens. When using a finger with a touchscreen, as opposed to a touchpad, it is advantageous to offset the "hot spot" by a few millimeters so that the spreading surface area of the contact point of the finger, as well as the size of the finger itself, does not hide or obscure the "hot spot" visual indicator or other attributes of the graphical user interface from the view of the user. With a stylus, there is no need to offset the "hot spot" visual indicator because a stylus tip is fine in comparison with a human fingertip. The ability to distinguish between finger and stylus contact permits such measures to be dynamically implemented during operation responsive to the use of either instrument.

Thus, the distinction between a touchpad and a touchscreen is significant because a user's view of the graphical user interface is not obscured when the user uses a finger to manipulate the touchpad. As Sellers teaches only a touchpad device,

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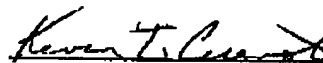
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Sellers provides no motivation to identify the source of a contact with the touchpad because there is no need to offset a pointer or change a graphical user interface according to whether a finger or stylus is used. Accordingly, Sellers does not teach or suggest, and in fact, teaches away from, making a determination as to whether contact was initiated by a finger or a stylus. In any case, Sellers does not teach or suggest the measures described in claims 5-10, such as offsetting a pointer a predetermined distance from the detected contact, detecting the duration of a contact, detecting the duration between a contact and a second contact, and presenting a visual interface in the touchscreen which corresponds to the type of contact that was detected.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection with respect to claims 1-21 is respectfully requested. The Applicants believe that this application is now in full condition for allowance, which action is respectfully requested. The Applicants request that the Examiner call the undersigned if clarification is needed on any matter within this Amendment, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

Date: 1/3/03


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